

reflex action, part of the œsophageal filaments acting as sensitive, and others as motor nerves.

Spinal Accessory.—In seven dogs this nerve was cut on one side, without affecting the ordinary voluntary movements of that side of the neck. In several animals a weak dose of prussic acid was given after the nerve had been cut on one side. In several cases this was followed by prolonged, forcible, and regular respiratory movements, after the animal had been deprived of all consciousness and voluntary motion. In three of these cases distinct movements of contraction and relaxation were observed in the exposed sternomastoid muscles, synchronous with the other muscles of respiration. The contractions were perhaps weaker on the side on which the spinal accessory had been cut.—*Ibid.*

PATHOLOGICAL ANATOMY AND GENERAL PATHOLOGY.

8. *Metastasis of the lacteal secretion.*—Drs. E. GRAEFE and HIRSCHEL report, in *Hufeland and Osann's Journal*, for 1836, two very remarkable cases in which the secretion of milk in the breasts suddenly ceased, followed by tumours at the knees. In both patients fluctuation was soon manifest, and an opening into the tumour gave issue to a large quantity of pure milk.

Prof. FLEISCHMAN relates, in the same Journal, the case of a young, healthy country girl, who the sixth day after delivery, suffered from a fright, which was followed by a chill, lassitude, pain in the head, and, after a few hours, loss of milk and violent delirium. Some hours after this, she was attacked with repeated sneezing, and a jet of milk, as large as a straw, was discharged from her right nostril. On this discharge being established the delirium began to diminish, her reason soon returned, she fell into a sound sleep, accompanied with perspiration; her breasts then filled with milk, and her health was re-established.—*Gaz. Med.*, Jan. 7, 1837.

9. *Vicarious urinary discharge.*—In our first number, (November, 1827,) two very extraordinary cases of vicarious urinary discharge were recorded, one by Dr. ARNOLD, of Providence; the other by Dr. SENTER. In the *Gazette Médicale de Paris* of Sept. 17, 1836, there is an account, by Dr. Lynker, of Pyrmont, extracted from a German journal, (*Wissenschaftliche ann. der gesammte Heilkunde*,) of a case similar in many respects to those to which we have just referred.

The subject of this last case was a woman, 24 years of age, who had menstruated, though with pain, since her 13th year, and had been subject from infancy to cramps, which produced a contraction of her lower limbs. In the summer of 1831, she had a fall on the front of her head, which stunned her for some minutes. For this she was bled by a drunken barber, four pounds, which produced extreme prostration, accompanied with spasms, sometimes tonic, at others clonic. A long time elapsed before she recovered her strength, and there remained a fixed pain in her forehead on the spot struck in her fall. In the autumn of 1833, she again suffered from spasms, which were followed by paralysis of her two extremities, (which two, we are not informed).

Many remedies were fruitlessly resorted to: the patient was attacked with abdominal typhus. The paralysis ultimately was cured by moxas. In consequence of mental emotion, the spasms suddenly returned and with great violence; at this period the phenomena presented themselves which render this case so remarkable.

The patient experienced, periodically, a painful stricture each side of the lumbar vertebræ, along the course of the ureters, sometimes more towards the kidneys, at others nearer to the bladder. Subsequently she complained of a violent heat in the abdomen, which was distended and very sensible to pressure. She had great thirst, sometimes chills, at others flushes of heat, anxiety, sleep disturbed by dreams, pulse small, feeble, irregular; impatience; obstinate constipation. Her condition daily became worse; her abdomen increased in size; vomiting supervened, and finally she discharged from her stomach a quantity of thin, clear, yellowish fluid, of a slightly urinous smell, after which she felt somewhat relieved. From the first appearance of these symptoms the patient had not passed a drop of urine by the ordinary passage,

although she at the time experienced a desire to do so. The bladder was not distended, and a catheter being introduced, a small quantity only of urine, as clear as water, and almost inodorous, was discharged. The spasms were slightly relieved by the administration of antispasmodics, followed by diuretics, warm bath, &c. When this dysuria had continued fifteen days, the condition of the patient remaining the same, some of the symptoms even aggravated, especially the vomiting, the patient complained of a continual pain in the axilla and the two mamma, and these parts evidently increased in size; the lactiferous vessels were tumid; this was followed by pains down the back, frequent chills, &c.; in general all the symptoms of milk fever. After a few days, a great quantity of colourless fluid, and of an urinous odour, was discharged from the mammae, followed almost instantaneously with relief of all the symptoms. After continuing two days this discharge ceased suddenly, and appeared from the umbilicus; after continuing some hours it again ceased, and appeared anew from the thighs. It continued but a short time from this last place, and did not recur there; but appeared alternately from the mammae and umbilicus, principally, however, from the former. During this period no urine was passed per viam naturalem, and but a few drops were brought away by the catheter. After this state of things had continued for several days acute pain was experienced in the abdomen, and a tumour suddenly appeared in the region of the bladder, and the patient passed, per urethram, seven pots of turbid urine, and twelve hours afterwards four pots more.

From this moment the patient was relieved from all her painful symptoms.

Subsequently this patient suffered from tænia, and was attacked with various nervous symptoms, and a bloody fluid was discharged alternately from her mammae and umbilicus, sometimes copiously. This discharge almost always immediately followed or preceded the menstrual flow.

10. Fibrous Tumour weighing one hundred and twenty pounds, developed in the Abdomen.—The subject of this rare case, was a gentleman 58 years of age, of remarkably muscular frame and robust constitution; accustomed to much exercise in walking, and who had always enjoyed excellent health. In 1833, after an attack of hemorrhoids, which were promptly cured by astringents, his abdomen began to enlarge, without, however, producing any greater inconvenience than that arising from its weight. In December, 1835, his abdomen had increased so much as to exceedingly restrict him in his accustomed exercise, and to induce him to apply to Dr. GUILLON, the narrator of the case, for relief. This physician believing that he could detect fluctuation in the abdomen, prescribed drastic purgatives, diuretics, &c., and these affording no relief, punctured the abdomen, but no fluid flowed through the canula. There was no inflammation of the integuments, and the internal functions were all regularly performed, but various physicians, who examined the case, concurring in the belief that fluctuation in the abdomen was manifest, tapping was again resorted to, and several times repeated, but without any fluid being obtained through the catheter. The abdomen continued to enlarge until the patient could not support any other posture than with his elbows on a table, or lying on his right side. The appetite, which to this period was good, began to diminish; swallowing food produced dangerous strangulation; the lower limbs and scrotum became infiltrated, and after several days constipation he died suddenly asphyxied, the 23d of November, 1836.

Autopsy.—The abdomen measured six feet five inches from the hypochondrium to the pubis; three feet four inches from the xiphoid cartilage to the same point; and five feet two inches around the body. *Fluctuation still very sensible.* The abdomen being opened, showed an enormous tumour occupying its whole cavity. This tumour closely adhered to the right side of the abdomen. It consisted of two portions, one superior and larger, the other inferior, thicker, and separated by a space, in which were lodged the mesenteric vessels. Both were fixed in front of the spinal column, extending from the space between the pillars of the diaphragm as far as the scrotum. The superior portion was divided by a deep furrow into two unequal lobes; it rested below on the second portion by a thin edge, whilst its superior border, which was thicker, was in contact with the liver and diaphragm, which it pressed upwards without adhering to them. Its form was irregularly rounded; its circumference five feet one inch; its greatest diameter nineteen

inches, and its smallest seventeen. On the left of and behind this portion, were the stomach, the spleen, and small intestines; the kidneys were under this mass; all these organs appeared healthy. The pancreas was redder than usual. The lumbar muscles were covered with large ecchymoses.

The inferior portion occupied the pelvis, and reposed on the iliac vessels, on the *venae cavae* which were gorged with blood, and on the sigmoid flexure of the colon which it compressed; it had not, however, any close adhesions with any of these parts. This portion of the tumour is thicker and more rounded than the other; its tissue firmer, and its surface more nodulated. Its circumference was four feet; its thickness seven and a half inches; its greatest diameter fifteen inches.

The caecum, which appeared much dilated, occupied the interval between the two tumours; a portion of the right lumbar colon is lodged in the fissure in the upper tumour, and the left lumbar colon adhered to the lower tumour.

The epiploons had disappeared, and the whole of the peritoneum seemed to have been used to cover this abnormal production, on the surface of which it formed a smooth membrane, and the development and lobulated form of which seemed also to have been determined by the attachments of this serous envelope.

The tumour of the scrotum was not at all adherent to those of the abdomen; it could, by taxis, be partly pushed through the ring which was much dilated, into the abdomen. It was flattened anteriorly and posteriorly; its lower portion was thinnest; its upper adhered to the aponeurotic expansions which covered the internal orifice of the inguinal canal; its internal border was straight and united to the spermatic cord. It was surrounded by several ganglions, which were hypertrophied and variously degenerated; some of them ossified.

These tumours were of a *gelatinous consistence*, and to the feel were like the medusæ. It might be supposed, from the sensation they presented to the touch, that they contained hydatids. On incising them, the tissue was found to be homogeneous, and evidently of a fibrous nature. The lower tumour was the firmest, and some portion of it was almost cartilaginous.—*La Presse Méd.*, 5 April, 1837.

11. *Dorsal Point*.—M. CRUVEILHIER has observed what has probably been noticed by most practitioners, that affections of the stomach, heart, liver and lungs, frequently coincide with pain in a fixed point of the vertebral column, varying according to the organ diseased. He calls this painful spot the *dorsal point*. Painful diseases of the viscera are, it is well known, very often accompanied with pains in a determinate point of the vertebral column. Every observer must have seen cramps of the stomach, when arrived at their height, give way to a pain more or less acute, about the fourth dorsal vertebra; and in some cases, the patients complain more of this pain than of the cramp of the stomach. This is observable not only in cramp, but also in ulceration and cancer of this organ. In hepatic colic, the dorsal point exists also about the eighth and ninth dorsal vertebra. In all pains of the heart, whether nervous or sympathetic, of an organic lesion, whenever they attain a very great height, the dorsal point at the fourth or fifth vertebra, accompanies the pain of the organ, and distracts the patient more than the latter. In diseases of the womb, the pain occurs at the second or third lumbar vertebra; and in the sacral region, in diseases of the neck of the uterus. Cruveilhier has found that greater relief is experienced by applying the remedies to the dorsal point than to other parts; thus, for example, patients affected with cancer of the uterus, receive greater relief from blisters, leeches, and cauteries, to the dorsal point, than to the hypogastrium. A woman affected with disease of the heart was entered as incurable at the Salpetrière; she was incapable of moving; she was obliged to lie in bed; she felt oppression, suffocation, and pain, occupying all the region of the sternum. Cruveilhier, after employing every possible treatment, digitalis, leeches, blisters, &c., for several months, thought of the dorsal point. The pain was circumscribed to two dorsal vertebrae. Cruveilhier applied the cautery to this point, and the pain was speedily removed; the oppression and suffocation disappeared; it is a year since she left the hospital and is considered as cured. Cruveilhier admits that he got the first idea of this treatment from an English memoir, in which it was proposed to apply therapeutical remedies to the vertebral column, in preference to other places. It was also suggested to him, by his researches on the nervous system, from which it results that the visceral or ganglionic nerves are not independent, but have their roots in the spinal

marrow; he conceives that by acting on the spinal marrow the organs will be influenced.—*Gazette des Hôpitaux*, July 8, 1837.

12. *Lecture on Auscultation of the Chest.* By M. Louis.—Many of you, gentlemen, have wished me to dedicate one of these conferences to the study of the auscultation of the chest. Although the facts which I shall have to set before you will be far from being all new; although a considerable part of them have been most accurately described by one of the great medical luminaries of our era, the celebrated author of the "Treatise on Auscultation;" and although you have already seen them singly in the cases which I have from time to time shown you in this clinical course, I still think that it will not be useless to combine these scattered elements, and to rise into those general reflections which are the natural consequence of their union. I yield the more readily to your wishes, because no one is more impressed than myself with the importance of auscultation, as a means of diagnosis in the diseases in which it can be employed, and because I am convinced that we cannot be too zealous in making a knowledge of it familiar, even by repeating what has been said often and often before. I shall merely give a summary view of the facts which have become, so to say, common-place in this science, and I shall insist more upon those which, though less known, are not less important, for they are the results of accurate observation in a very considerable number of individual cases.

Auscultation is the exploration of the sounds which are produced in different parts of the body, whether healthy or diseased. As I wish to confine myself to one lecture, I shall speak only of the auscultation of the respiratory organs; and, as a preliminary, I will mention the precautions which must be taken in order that auscultation may be practised with accuracy, and that inferences may be drawn from its results without risk of error.

The person to be examined should lie on his back, or sit, according as we wish to auscult the anterior or the posterior part of the chest; he must lean neither to the right nor the left; his shoulders must be in the same plane, and his symmetrical muscles in the same state of relaxation or tension as the position of the patient.

The contraction, tension, and relaxation of the muscles, have a marked influence on the results of auscultation, and when the corresponding points of the thorax are examined in comparison with each other, as we must always do if we want to draw rigorous inferences, we might imagine differences that did not exist, merely from the bad attitude of the patient.

The auscultator, too, must select a convenient position, as Laennec recommends, and take care that the respiratory sounds are not intercepted by thick clothes, and particularly that the patient does not retain any which might produce a fallacious sound, as, for instance, silk coverings. He must also find out which is his best ear, as experience shows that almost every observer has one ear finer than the other. All these precautions, which at first sight may seem over-punctilious, are absolutely necessary to prevent our falling into gross errors.

In opposition to Laennec, it is now allowed that the naked ear perceives sounds as well as when aided by the stethoscope; and, indeed, it often happens that it distinguishes shades of sound which had escaped it when assisted by this instrument. The cases in which we ought to prefer mediate auscultation are very rare, and it is often necessary to have recourse to immediate auscultation to determine with clearness what would otherwise be obscure.

The patient and the observer being properly placed, auscultation, to be successfully practised, requires another condition, namely, the ear, if unaided, is to be exactly applied to the chest; if the stethoscope is used, the whole of its circumference is to be applied to the parieties of the thorax, so that if the patient is so wasted that the intercostal spaces leaves a cavity under the stethoscope, it must be filled up by compresses placed upon the thorax.

All these preliminaries being observed, auscultation requires nothing but a certain degree of attention; and as it is impossible to know what is pathological, without first knowing what is normal, I will briefly state the sounds which belong to the healthy state.

§ I. *HEALTHY STATE. Normal Respiration.*—In a healthy person, we hear during inspiration a soft and gentle murmur, which is especially distinct towards the anterior and lateral parts, as well as the lower two-thirds of the pos-

terior part of the thorax. The respiration approaches the bellows' sound in the space between the vertebral edge of the scapula, and the dorsal spine, at the level of the origin of the bronchi; and this blowing respiration, which exists also, though in a less degree, towards the sub-spinal fossæ, is more marked on the right than on the left; a circumstance worth remarking, as, if one was not forewarned of it, one might mistake the healthy for a diseased state. This difference is accounted for by the calibre of the bronchi, which is greater on the right than the left side, as appears from the researches of Dr. Gerhard, of Philadelphia.

These phenomena take place during inspiration only; for, at the moment that expiration begins, the respiratory murmur ceases to be heard, or nearly so, excepting in the upper and posterior third, where a sound similar to that of inspiration, at the same points, but weaker, may still be heard. These sounds vary in force according to age, *embonpoint*, and the strength of respiration; but in these different circumstances their essential characters are not sensibly changed.

Resonance of the voice.—If a healthy man speaks while we are examining his chest by auscultation, we perceive a resonance, a sort of general tremor, which is at its maximum behind, and at the junction of the middle and the upper third of the chest; that is to say, at the same point where the slight blowing respiration is heard. These two effects are owing to the same cause, and this slight bronchophony is rather stronger at the right than at the left apex, for the reason stated above; so that when this difference is inconsiderable, and not accompanied by any remarkable modification of respiration, we cannot infer from it the existence of any morbid state.

§ II. PATHOLOGICAL STATE. The alterations produced by disease in the different sounds which I have just described, are numerous and varied. Let us examine them with care, and let us see what is the degree of their importance relatively to diagnosis, and whether, if properly studied alone, these alterations are capable of distinguishing the different diseases of the chest from one another. Let us first study the alterations of the respiratory sound, independently of the rhonchi (*râles*) which are combined with them.

1. *Modification of the respiratory sound.*—The most simple of these modifications is obviously the weakening of the respiratory murmur; it is found in the emphysema arising from dilatation of the pulmonary vesicles. This weakening, which is generally proportioned to the duration of the disease, is at its maximum anteriorly, where the emphysema is usually the greatest; it is also permanent. If it is general, and not considerable, we may be uncertain as to its real cause, for the strength of the respiratory murmur varies in a state of health: but if the diminution is limited in extent, and constantly observed; if it is on one side of the thorax only, or if it differs in degree at corresponding points, it is obviously pathological, and very probably depends on a greater or less dilatation of the pulmonary vesicles. It is true that the diminution of the respiratory sound takes place in other diseases, in pleurisy, in phthisis, and in pulmonary catarrh; but then it is developed in particular conditions which allow us to recognise its real cause, or at least strongly suspect it.

In pleurisy, indeed, when the effusion is not very considerable, we can hear the respiratory murmur through the effusion, but much less clearly than in the healthy state, or than at the corresponding point of the other side; and then, moreover, this diminished respiratory sound is deeply situated, and has the softness of the normal state. It is particularly below and behind that it is found, while in emphysema the maximum of diminution of the respiratory sound takes place anteriorly. This latter sound, too, is superficial; it becomes dry, and loses its regular softness. Although in phthisis the diminution of the respiratory murmur is generally found at the beginning of the disease, it is at the apex of the chest where the development of tubercles begins. When this diminution takes place in pulmonary catarrh, it is not permanent; and as it depends on the obstruction of the bronchi by mucus, it is merely requisite to make the patient cough, to remove the obstacle which hindered the free passage of the air, and thus restore the natural intensity of the respiratory murmur.

Hence the diminution of the respiratory sound, when properly studied, can lead us, independently of a rhoncus, of percussion, or of the inspection of the thorax, to a diagnosis of several affections of the lungs; and if this diagnosis is

not absolutely infallible, at any rate it is such as to establish the strongest presumption in favour of the existence of such or such an affection. To sum up, the diminution of the respiratory murmur derives all its value from its situation, its permanence, its degree of distance from the ear, or nearness to it, its dryness or softness. Thus:—

First, in emphysema this diminution continues in the same point, is usually at its maximum anteriorly, and is accompanied by a certain roughness, which does not exist in the healthy state.

Secondly, in pleurisy it occurs at the inferior and posterior part; the respiratory sound is deeply situated, and preserves its softness.

Thirdly, in phthisis the diminution takes place at the apex.

Fourthly, in pulmonary catarrh its situation is variable, and its duration momentary.

A similar circumstance occurs in these various affections: in the first three a certain number of pulmonary vesicles no longer admit the air, in consequence of the compression which they suffer; in the last, in consequence of the presence of mucus in the bronchi.

2. *Absence of the respiratory sound.*—The respiratory sound may be completely wanting, and this over a variable space. This occurs when a tumour compresses the great bronchi, as in some cases of aneurism; or when there is a slight effusion of air or water, as in pneumo-thorax, or many cases of pleurisy.

In the last two cases, auscultation, independently of other means of examination, cannot fix the diagnosis of the disease which suppresses respiration. It is not so in the first, if the respiratory sound is wanting only on the surface of the lung, as effusions of air and water are not limited to this part of the pleura.

Having considered the diminution and absence of the respiratory sound, let us examine its morbid changes.

3. *Alteration of the respiratory sound.*—a. The most remarkable for its strength is amphoric resonance, or amphoric respiration, which arises from the air entering a large cavity through a narrow opening. When it exists, we are certain to find either a considerable excavation in the substance of the lungs, consequent on the breaking down of tuberculous matter (and then its seat is always at the apex of the lung), or a cavity arising either from a defined gangrene, or from a large bronchial dilatation, in which case its seat is variable. Thus it is the place alone where amphoric respiration is found which could serve to fix the diagnosis, if we did not know the other symptoms and the progress of the disease; for in all these cases the modification of the respiratory sound is precisely the same. But the laws of pathology are so unchangeable, that even if we had nothing to assist us but the knowledge of the seat of the lesion, the diagnosis would be almost certain.

b. When less considerable, the alteration we have been treating of is called bronchial respiration; it is a sound like that which is heard when the ear is applied to the trachea. Bronchial respiration occurs whenever the air passes through the bronchial tubes without reaching the pulmonary cells. In those cases where the substance of the lung is disorganized, and approximates to a completely solid tissue, it is—

First—One of the most certain signs of the red and grey hepatization of the lungs, being the alterations which constitute the second and third stage of pneumonia; they occur almost always posteriorly, and more frequently at the base than the apex.

Secondly—It also occurs in pleurisy, when it is less distinct, and somewhat smothered; it is then sometimes capable of being displaced by the effusion—a phenomenon which does not take place in any other affection.

Thirdly—In the dilatation of the bronchi, it is remarkable for constantly remaining in the spot opposite to the lesion, whatever may be its seat.

Fourthly—Tubercles, when they have arrived at a certain stage, are manifested by bronchial respiration under the clavicle, and in the supra-spinal and sub-spinal fossæ. We must beware, however, of confounding natural and bronchial respiration, as they have some resemblance; it requires a practised ear not to be deceived in a host of cases where the characteristic of which we are speaking is not prominent, and is consequently doubtful. It is by alternately and carefully examining the corresponding points of both sides, that we shall succeed in discriminating the difference, not forgetting that there is a slight difference in the

healthy state, respiration being always stronger and more dry on the right side, and consequently approximating a little more to the bronchial *souffle*. This excess of sound appears still greater when the two sides are compared; so that the physician who was not aware of this would obviously be liable to serious mistakes.

In all the affections in which bronchial respiration is met with, there is a great similarity in the organic lesion. The substance of the lungs is condensed by inflammation in pneumonia, by compression in pleurisy; it is more or less indurated around dilated bronchi; when there are tubercles, the pulmonary vesicles are replaced by the new formation.

c. Prolonged and blowing expiration is a change in the respiratory sound allied to bronchial respiration. In order to estimate it at its just value, we must recollect that this part of respiration, which in most persons is performed without any sound, may be accompanied by a slight murmur without any disease, provided that it is equal in the corresponding points of both sides. At the same time that the expiration is prolonged, the inspiration loses its softness and mellowiness, becoming less strong, but more rough. If these two phenomena are observed under the clavicles, they are sufficient of themselves to make us admit the presence of tubercles; and this characteristic sign is the more valuable, as it is generally met with before phthisis is far advanced.

d. Between bronchial respiration and amphoric resonance there is an intermediate modification, namely, cavernous respiration, of which the name alone points out the kind of lesion on which it depends.

To produce cavernous respiration, the lung must contain a large excavation, communicating by one or more bronchi with the external air. But excavations of this kind may be produced in four different ways:—

1st. By the breaking down of tubercles. In this case, cavernous respiration is found at the apex of the chest, and its situation is enough to indicate the lesion on which it depends.

2nd. When, in the progress of pneumonia, abscesses are formed, (a rare event, however,) it is cavernous respiration which points out their existence as soon as they communicate with the external atmosphere. In such cases the alteration of the respiratory sound is found most frequently at the base of the lungs.

3d. The excavation may arise from a partial gangrene, of which the matter becomes liquid and is evacuated externally by one or more bronchi in communication with the collection of pus.

4th. It may be the effect of a very large bronchial dilatation. In these last two cases the situation no longer assists the diagnosis, for gangrene and dilatation of the bronchi may appear in very different parts.

To these morbid changes in respiration are allied other phenomena of auscultation produced by the resonance of the voice.

MODIFICATIONS OF THE RESONANCE OF THE VOICE. a. *Bronchophony*.—The most remarkable of these changes is the one which accompanies bronchial respiration, and is called bronchophony. These two sounds are necessarily associated, and whenever one is heard we are sure to find the other. They are met with:—

First, in the first and second stages of pneumonia. In this case, the bronchophony is constant, continues for a very considerable time, and varies in extent and intensity, according to the progress of the disease.

Secondly, in dilatation of the bronchi. In this affection it is not always of the same loudness; this arises from the greater or less thickness of the indurated tissue around the dilated tubes.

Thirdly, in tuberculous subjects, bronchophony is heard at the apex, and, posteriorly, in the supra-spinal and sub-spinal fossæ, and under the clavicles. The remark we made on bronchial respiration holds good here: the farther we go, the more we must be convinced that auscultatory signs derive their chief value from the place where they are discovered; for the same sign belongs to several different affections, the seats of which are different also.

Fourthly, in pleurisy, bronchophony manifests itself at the inferior and posterior part of the chest. This would not be sufficient to distinguish it from the bronchophony produced by pneumonia, were it not for another characteristic sign, namely, the possibility of altering the place when the sound is heard, by altering the situation of the effused fluid; but this is not necessary to make the

diagnosis certain, when bronchophony undergoes the particular modification which is called ægophony. It may be admitted as a general rule, that ægophony (which is variable in intensity, and often difficult to find) is a pathognomonic sign of pleuritic effusion; and to produce it, the effusion must reach but not overpass certain limits, the extent of which is not known.

This situation inferiorly, and the facility of displacement, though generally signs of pleurisy, do not form a rule without an exception. To convince you of this, it will be sufficient to tell you that Laennec once saw a case of numerous adhesions separating several effusions from each other, which formed so many partial pleurisies. It is evident that in cases like this the effusion may be suspended, so to say, at different heights, and that it cannot be displaced.

Another difficulty now and then occurs. In some patients the pleuritic pain is but slight, and the resonance of the affected side differs but little from that of the opposite one: ægophony is difficult to ascertain, and the only appreciable alteration consists in a slight diminution of the respiratory sound. In such cases is there effusion? If there is, the quantity of fluid must be very small.

Though there is no doubt as to the way in which bronchophony is produced (for there the sound, after reaching the greater bronchi, is transmitted to the ear by a tissue which has become completely solid), it is not the same with ægophony, which is not easily explained. Laennec attributed it in great measure to a certain degree of flattening, which he supposed the bronchi to sustain from their compression by the fluid. Among the number of the arguments which he has himself given against this theory, he has forgotten one, namely, that when strong and thick adhesions have taken the place of the fluid, this flattening ought to occur and produce ægophony, which is not the case. In short, we must conclude that ægophony has the most striking resemblance to bronchophony, from which it differs only by one peculiarity, viz. *bleating*.

b. When still louder, the resonance of the voice is called pectoriloquy, which resembles the sound that would be produced if the patient spoke directly into the ear of the observer. It is indispensable for its existence that there should be a very considerable cavity communicating with the bronchi. It occurs—

First, in phthisis, when the cavities have acquired a certain size, and are surrounded by an indurated tissue;

Secondly, in gangrene, when the parietes have acquired a sufficiently great density;

Thirdly, in abscess of the lungs;

Fourthly, in dilatation of the bronchi, when it is sufficiently great.

The existence of pectoriloquy being once ascertained, its situation will assist in pointing out, if not with certainty, at least with probability, the kind of lesion on which it depends. If it is at the apex of the lung, there is a strong probability in favour of a tubercular excavation; if it is at the lower part, a dilatation of the bronchi may be suspected. The other two lesions which may give rise to pectoriloquy have no fixed seat.

It may happen that no pectoriloquy can be heard, though the existence of a considerable excavation is certain: this happens when the communication of the cavity with the exterior is cut off by the compression of the corresponding bronchi, or the obstruction of these tubes by substances proceeding from the excavations; in this case auscultation loses the greatest part of its advantages.

THE RHONCHI. The auscultatory signs which we have successively considered are nothing more than morbid changes of the respiratory sound. Let us now examine another series of phenomena, which are not less important, and which cannot be considered as deviations from the normal state of respiration. This series consists of the rhonchi, which are divided into two kinds, the dry and the moist.

1. *Dry rhonchi*.—These may be reduced to two chief ones, the sibilous and the sonorous rhonchus.

a. The sibilous rhoncus resembles a slight and prolonged whistle, either grave or acute, dull or clear; it occurs—

First, almost always in emphysema, and sometimes from one extremity of the chest to the other; it is capable of masking the respiratory sound.

Secondly, in pulmonary catarrh it is generally limited in extent, and attacks different points successively, which is not the case in emphysema.

Thirdly, in typhoid affections it occurs in three-fifths of the cases; generally about the eighth day, and over the whole chest.

Some practitioners have considered it, in such cases, a symptom of inflammation of the bronchi; but the readiness with which it changes its place does not allow of this supposition: there is no doubt that it depends on the presence of a small quantity of fluid, which easily changes its place.

b. The sonorous rhoncus is a grave sound, and sometimes extremely loud; at one time resembling snoring, at another the sound of a bass-string, and, very frequently, it is like the cooing of a turtle-dove. It is very commonly found at the commencement of pulmonary catarrh. Laennec supposes it to proceed from the swelling of the bronchial mucous membrane, especially at the prominence produced by the division of the bronchi; but he does not give any case in confirmation of this theory, nor does he tell us how he ascertained the existence of this lesion.

2. *Moist rhonchi*.—These are more frequent than the preceding ones, are of greater importance, and in a great number of cases are sufficient to fix the diagnosis.

Mucous rhoncus.—This has been compared to the sound of air blown through a tolerably dense fluid, such as soap-and-water, or sometimes a thicker liquid.

It is one of the signs—

First, of pulmonary catarrh; it then exists on both sides, and progressively descends.

Secondly, of phthisis, when the tubercles become soft; it then occurs at the apex of the lungs, under the clavicles.

Thirdly, of gangrene.

Fourthly, of dilatation of the bronchi.

Fifthly, of abscess of the lung.

It is generally circumscribed, and confined to one side, when alone, therefore, it cannot form a pathognomonic sign.

The mucous rhoncus has several varieties in relation to the size of its bubbles, which vary from the smallest to the greatest.

The crepitous rhoncus has been accurately compared to the sound produced by salt thrown on burning coals, or by dry parchment rubbed between the fingers. It exists in one disease only, namely, pneumonia: it is the pathognomonic sign of its first stage, or pulmonary *engouement*. It is small, equal, clear, and most usually without respiratory murmur. As long as it is not very extensive, it is unaccompanied by bronchial respiration. Is it always met with, as Laennec says? On this point the author of the *Treatise on Auscultation* contradicts himself; for he says, in one passage, that this rhoncus is only heard at a small distance from the ear; yet afterwards, when speaking of pneumonia, he adds, that an inflamed nucleus in the centre of the lung, were it no bigger than an almond, would be discovered by producing the crepitous rhoncus. It is acknowledged, however, that in such a case the crepitous rhoncus is not heard: this has been proved by MM. Chomel and Andral. One remark to be made upon this rhoncus is, that it is heard over the whole chest of some healthy persons, at the instant of a first forcible inspiration, after which it disappears. In this case is it owing to the presence of a certain quantity of fluid in the pulmonary cells, or rather to the unfolding of their parieties? The latter supposition ought to be adopted, when we consider that this operation is identical with that which occurs in the infant at the moment that the air enters the lungs for the first time.

Can this rhoncus be confounded with the sub-crepitous rhoncus? Undoubtedly not; for the crepitous rhoncus is finer, clearer, more dry, and always uniform. The sub-crepitous rhoncus is coarser and more moist, and the size of its bubbles is very variable. This distinction is of very great importance. Practitioners, from confounding the two rhonchi, have thought that they had to do with a pneumonia when it was only a pulmonary catarrh, and may also have thought that it was their treatment which prevented it from passing from the first to the second stage.

The *sub-crepitous rhoncus* occurs especially:—First, in the pulmonary catarrh, when it is acute and intense; its regular situation is the posterior and inferior part of the chest, on both sides at once; it sometimes extends to the upper part,

but always begins below. It varies according to the stage of the catarrh, and but rarely masks the respiratory murmur.

Laennec admits its existence in emphysema, and makes it the chief sign of that disease; but this is a mistake. In emphysema this rhoncus is identical with that of pulmonary catarrh; it occurs in the same points—that is to say, posteriorly, inferiorly, and on both sides; but if it depended on the emphysema, it ought to occur in front, where the emphysema has its seat, which is never the case.

Secondly, Laennec admits of its existence in pulmonary œdema. To allow of this, it would be necessary that the serous fluid in the cellular tissue of the lung should transude through the bronchi; but this is not so.

Thirdly; if the sub-crepitous rhoncus is heard on one side only, posteriorly and inferiorly, it either indicates tubercles, or, more rarely, a dilatation of the bronchi.

This law is without exception; at least for the last four or five years, in five or six hundred simple pulmonary catarrhs which have fallen under our observation, the sub-crepitous rhoncus has always existed on both sides at once.

Fourthly, it is often heard at the upper part of the chest, and is then sufficient of itself, if not to make us affirm positively that there are tubercles, at least to make us strongly suspect it.

You have seen, gentlemen, the application of this rule within these few days, in the case of a patient labouring under chronic peritonitis, and in whom the sub-crepitous rhoncus existed only at the upper part of the chest. This sign confirmed the idea that I had formed of the tubercular nature of the peritonitis.

I should tell you, moreover, that I have never met with a chronic peritonitis that was not tubercular.

Having now gone through the rhonchi, I must explain another auscultatory sign, the *metallic tinkling*, which consists of a clear and silvery sound, exactly like that produced by a pin or a metallic point in a silver cup.

It occurs in two cases:—

First, when there is a large tubercular excavation, and

Secondly, in perforation of the pleura. Hence the necessary condition for its development is the existence of a considerable cavity containing a little fluid, surmounted by a certain quantity of air.

The explanation given by Laennec, who compares it to the sound produced by a drop of fluid falling upon the surface of the effusion, has lately been combated by M. Beau. This physician considers it produced by a bubble of air, which, having traversed the fluid, bursts upon its surface.

M. Beau finds his opinion on the fact of his never having witnessed metallic tinkling when the communication with the external air was above the level of the fluid.

Lastly, I will not finish this lecture without examining with you an auscultatory sign of great importance—the *sound of rubbing*. It requires great attention to distinguish it from a similar sound arising from the clothes of the patient or the observer.

First, Laennec has pointed out this sound as being a characteristic of interlobular emphysema.

Secondly, it is one of the first signs of pleurisy, but it is difficult to ascertain it, on account of the rapidity with which effusion is produced. It is frequently met with at the end of the disease, when the effusion is completely absorbed and false membranes alone remain.

Thirdly, in some patients who have suffered from pneumonia, and who are nearly cured, a well-marked crepitation can be perceived for a long time; and this, when combined with a certain dulness in the sound, might deceive one, and make one believe in the existence of a continued engorgement of the lung, which it is not easy to suppose. Is it not more probable that this sound is owing to the friction of false membranes incompletely organized? This interpretation is supported by the anatomy of these false membranes, which are often found to have a reticulated appearance. Would not these uneven surfaces produce the continued crackling, by rubbing against one another? It is a difficult question; but this seems to me the probable solution.—*London Med. Gaz.* from *La Presse Médicale*, July 1 and 5, 1837.

13. *Discharge of a Beetle from the Urinary Bladder.*—A robust man, aet. 23, who had never been ill except just previously of fever, was attacked suddenly by symptoms of the most acute inflammation of the urinary bladder, with intense desire to make water, pains in the perineum, and discharge of mucous flocculent and bloody urine. He was treated by leeches to the perineum, anodyne local applications, and copious demulcent drinks, but without the least relief. After suffering intensely for five days, he found himself unable to pass his water, and this evidently from some mechanical obstruction in the urethra. To relieve this, Dr. Erismann was sent for; but before a catheter could be introduced, the patient discharged a body, of the size of a pea, covered by purulent matter; it was followed by the escape of a considerable quantity of urine, mixed with pus, and immediate relief of all his symptoms. On closely examining the discharged body, it was found to contain a little beetle (*Ptinus fur.* Linn.), which died directly on its exposure to the atmosphere. The patient recovered in three days.

The author quotes several cases of a similar kind, in which worms, larvæ, insects, and one from Schrader, where living slugs were discharged from the bladder, and speculates at great length and with much ingenuity on their origin.—*Lond. Med. Gaz.* from *Schweiz. Zeitschrift*, Vol. II. Part 1.

MATERIA MEDICA AND GENERAL THERAPEUTICS.

14. *On the action of Narcotics.* By G. G. SIGMOND, M. D.—(Extracted from his lectures on Materia Medica, delivered at the Windmill street School of Medicine.) Narcotics are distinguished from all other medicines by the specific action which they exercise upon the cerebro-spinal system, but more especially upon the brain, to which, quickly after they are taken into any part of the system, they are conveyed by the blood-vessels. They closely assimilate in their general action, according to the nature of each individual substance and the quantity which may be applied, though considerable differences occur in their individual capacity. Although in their greatest state of intensity, the result of their action is so instantaneous that the progress is scarcely to be watched, in their general operation we observe three stages consecutive to each other; first, an acceleration of arterial blood to the brain; secondly, a venous retardation there; thirdly, an engorgement of the circulatory system in that organ; the first stage being marked by the increased energy of the functions, corporeal and intellectual; the second stage exhibiting their disordered state; and the last stage their temporary suspension.

A familiar illustration of these three consequences may be observed in the state of intoxication from a diffusible stimulus, alcohol, which is classed, from its ultimate effects, under the narcotics. During the arterial acceleration produced by alcohol in its various forms, there is an elevation of the faculties and the corporeal powers; this is differently exhibited, and is much dependent upon the source from which the spirit is obtained, and the state in which it is combined. But the ordinary results are—a glow of heat, an increase of the capillary circulation, the cutaneous perspiration more abundant, the respiration performed with ease; the pulse is, consequently, increased in strength and frequency, the animal heat is elevated, the eyes become more than usually expressive, the countenance is lively; as the stimulus is increased, so are the phenomena of excitement; the circulation acquires a febrile rhythm, the functions are exercised with an inordinate energy, the mind keeps pace with the body; mirth, and joy, and gaiety, are awakened, the wit is lively, and the intellect improved; but to this succeed a general languor and sluggishness, nausea, sickness, vomiting, an obscurity or haziness of vision, incoherence of speech, unwonted muscular motion, muscular debility, and incapability of exercising volition; the vision becomes double; vertigo, internal anxiety, and depression of spirits; in the third stage, a peculiar state between stupor and sleep, which has been called somnolence, occurs. This is the train of phenomena which mark the diffusible action, and the depressing re-action, of narcotics. Great is the rapidity with which many of these agents are taken into the system; an example of this occurs in ether: when a small quantity is given, in a few minutes it finds its way into the circulation; it acts upon the nervous system al-